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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,045	12/19/2001	Kazuhiro Noguchi	2975.0011	6205

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EXAMINER

WILSON, JACQUELINE B

ART UNIT PAPER NUMBER

2612

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/021,045	Applicant(s) NOGUCHI, KAZUHIRO	
	Examiner Jacqueline Wilson	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-25, 27-38 is/are rejected.
- 7) ☒ Claim(s) 13, 26 and 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/03/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "**The disclosure concerns,**" "**The disclosure defined by this invention,**" "**The disclosure describes,**" etc.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 5, 9-12, 14, 18, 22-25, 27, 31, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Imura et al (US 5,974,270).**

Regarding Claim 1, Imura et al teaches a lens unit (fig. 5, element 5) having an optical axis (I), a movable member holding the lens unit (6) which makes the lens unit movable within a plane orthogonal to the optical axis (col. 4, lines 43-46), a fixed member (407) for limiting the movement of the movable member in the optical axis

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direction (see fig. 5), at least three balls (referred to as steel balls 450, 455, and 460; col. 6, line 55) disposed between the movable member and fixed member (fig. 3 shows each ball and fig. 4 shows a cross sectional view of the ball location), which can roll between the movable member and fixed member and make relative movements of the movable member and fixed member possible (col. 6, lines 56-59), a vibration detecting unit (fig. 2, 131 and 134) which outputs vibration information corresponding to vibration, and a drive unit (440 and 441) for driving the movable member within the optical axis orthogonal plane (col. 7, lines 38+) in accordance with the vibration information from the vibration detecting unit (col. 6, lines 9-21), which includes at least a drive magnet (414) held by the fixed member and a yoke (413) and a coil held by the movable member (412). Since the claims gives an alternative arrangement, the examiner relies on the first teaching and not the limitation of at least a drive magnet held by the movable member and a yoke and a coil held by the fixed member. Imura et al further teaches the drive unit presses the movable member toward the fixed member side by means of a magnetic pressing force caused by magnetic attractive action between the drive magnet and yoke (col. 7, lines 38+).

Regarding Claim 5, Imura et al does not specifically disclose the magnetic pressing force caused by magnetic attractive action between the drive magnet and yoke is greater than the weight of the movable member. However, it is inherent that the force is greater than the weight of the movable for the purpose moving the device. One having ordinary skill would recognize that if the weight of the movable member were greater than the magnetic force, the movable member would not be able to swiftly move

in the manner it was intended. By having the movable member to be lighter than the force causes easy manipulation of the device when vibration occurs.

Regarding Claim 9, Imura et al teaches the fixed member contains portions for containing the balls and limiting the movable ranges of the balls (referred to as steel ball receiving members 451, 456, and 461).

Regarding Claim 10, Imura et al teaches each containing portion is shaped into a quadrilateral with four sides for limiting the movable range of the balls (fig. 4 shows a top and bottom portion, and inherently teaches right and left sides), and the length of one side of the containing portion is longer than the length resulting from summing the diameter of the balls and the maximum movement amount of the balls in response to the movement of the movable member (fig. 4 shows the containing portion includes the diameter of the ball as well as excess space above and below the ball).

Claim 11 is analyzed and discussed with respect to Claim 1, wherein the pitch direction drive and yaw direction drive (440 and 441) drives the movable member in directions B_y and B_x as shown in fig. 3. (See rejection of Claim 1 above.)

Claim 12 is analyzed and discussed with respect to Claim 11. (See rejection of Claim 11 above.) Furthermore, Imura et al teaches a pitch directional position detecting unit and a yaw directional position detecting unit (referred to as position sensors 443 and 442) for detecting the moving position of the movable member in the pitch and yaw directions (col. 7, lines 55+), where the pitch detecting directional axis of the pitch directional position detecting unit and the yaw detecting directional axis of the yaw directional position detecting unit are substantially on and along the optical axis when

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the movable member is at a neutral position in the pitch direction and yaw direction (see figs. 3 and 6).

Claim 14 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

Claim 18 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 22 is analyzed and discussed with respect to Claim 9. (See rejection of Claim 9 above.)

Claim 23 is analyzed and discussed with respect to Claim 10. (See rejection of Claim 10 above.)

Claim 24 is analyzed and discussed with respect to Claim 11. (See rejection of Claim 11 above.)

Claim 25 is analyzed and discussed with respect to Claim 12. (See rejection of Claim 12 above.)

Claim 27 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

Claim 31 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 35 is analyzed and discussed with respect to Claim 9. (See rejection of Claim 9 above.)

Claim 36 is analyzed and discussed with respect to Claim 10. (See rejection of Claim 10 above.)

Claim 37 is analyzed and discussed with respect to Claim 11. (See rejection of Claim 11 above.)

Claim 38 is analyzed and discussed with respect to Claim 12. (See rejection of Claim 12 above.)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 15, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imura et al in view of Usui (US 6,400,902).

Regarding Claim 2, Imura et al fails to specifically disclose at least a projection for causing magnetic attraction action by the drive magnet is provided on the surface of the yoke at the sides opposed to the drive magnet. However, Usui teaches that projections on the surface of the yoke are notoriously well known in the art. Usui teaches a blur correction apparatus for correcting vibration of a camera by using magnets. Projection (32c) is provided opposed to the drive coils (13a to 13d) constituting the magnetic driver section for correcting blur (col. 5, lines 35+; col. 4, lines 59-60). It would use the projection in Imura et al for the purpose of driving the device for correcting blur due to vibration of the camera. Therefore, it would have been obvious to one having ordinary skill in the art to include at least a projection for causing

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magnetic attraction action by the drive magnet is provided on the surface of the yoke at the sides opposed to the drive magnet.

Claim 15 is analyzed and discussed with respect to Claim 2. (See rejection of Claim 2 above.)

Claim 28 is analyzed and discussed with respect to Claim 2. (See rejection of Claim 2 above.)

6. Claims 3, 4, 6, 16, 17, 19, 29, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imura et al.

Regarding Claims 3 and 4, Imura et al teaches the balls are formed from steel (col. 6, line 55). However, Imura et al fails to specifically disclose the balls are formed from a material that does not easily cause magnetic action such as stainless steel. However, it would have been obvious to use stainless steel balls in the device of Imura et al for preventing inaccurate results from other magnetic materials. Using stainless steel balls would also be advantageous for the purpose of resisting corrosion of the steel, as well as "self-repair" of the steel if scratched or damaged. Therefore, it would have been obvious to one having ordinary skill in the art to have the balls form of stainless steel which does not easily cause magnetic action.

Regarding Claim 6, Imura et al fails to specifically disclose the magnetic pressing force caused by the magnetic attractive action between the drive magnet and yoke is 5 times or more the weight of the movable member. However, it would have been obvious at the time of manufacture to have the magnetic attractive action being much

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greater than the movable member for providing easier movement of the movable member when vibration is detected. This uses less current to activate the movable member. Using a weight of 5 times or more is an obvious matter of design choice as determined during the time of manufacture for using a large magnetic attractive action of 5, 10, or 20 does not change the scope of the invention. Therefore, it would have been obvious to one having ordinary skill in the art to use a magnetic pressing force caused by the magnetic attractive action between the drive magnet and yoke to be 5 times or more the weight of the movable member.

Claims 16 and 17 are analyzed and discussed with respect to Claims 3 and 4. (See rejection of Claims 3 and 4 above.)

Claim 19 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claims 29 and 30 are analyzed and discussed with respect to Claims 3 and 4. (See rejection of Claims 3 and 4 above.)

Claim 32 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

7. Claims 7, 8, 20, 21, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imura et al in view of Imada (US 5,761,546).

Regarding Claims 7 and 8, Imura et al fails to specifically disclose the contact surfaces between the balls and movable member and the contact surfaces between the balls and fixed member is applied lubricating oil, such as grease, which has a viscosity

at a degree by which the balls are held between the movable member and fixed member without relying on the pressing force caused by magnetic attractive action between the drive magnet and yoke. However, Imada teaches an image blur apparatus which uses a fluorine-based grease applied to contact surfaces between support balls and first and second yokes (col. 4, lines 48+). This provides a viscosity at a degree in which the support frame can freely slide within the plane perpendicular to the optical axis with respect to the base. It would have been obvious to use this same concept in Imura et al to provide easier slide for adjusting vibration without relying on the pressing force of the magnets. Therefore, it would have been obvious to use lubricating oil applied to the contact surfaces between the balls and movable member and the contact surfaces between the balls and fixed member for the purpose of maneuvering the movable member freely to correct for vibration.

Claims 20 and 21 are analyzed and discussed with respect to Claims 7 and 8.
(See rejection of Claims 7 and 8 above.)

Claims 33 and 34 are analyzed and discussed with respect to Claims 7 and 8.
(See rejection of Claims 7 and 8 above.)

Allowable Subject Matter

8. **Claims 13, 26, and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

Regarding Claim 13, the prior art neither teaches nor fairly suggests a vibration correcting device comprising: a lens unit having an optical axis; a movable member holding the lens unit, which makes said lens unit movable within a plane orthogonal to the optical axis; a fixed member for limiting the movement of the movable member in the optical axis direction; at least three balls disposed between the movable member and fixed member, which can roll between the movable member and fixed member, and make relative movements of the movable member and fixed member possible; a vibration detecting unit for detecting vibration, which outputs vibration information corresponding to vibration; and a pitch direction drive unit for driving the movable member in the pitch direction within the optical axis orthogonal plane and a yaw direction drive unit for driving the movable member in the yaw direction within the optical axis orthogonal plane in accordance with the vibration information from the vibration detecting unit, which include drive magnets held by the fixed member and yokes and coils held by the movable member, or include drive magnets held by the movable member and yokes and coils held by the fixed member; a pitch directional position detecting unit for detecting the moving position of the movable member in the pitch direction and a yaw directional position detecting unit for detecting the moving position of the movable member in the yaw direction, where the pitch detecting directional axis of the pitch directional position detecting unit and the yaw detecting directional axis of the yaw directional position detecting unit are substantially on and along the optical axis of the lens unit when the movable member is at a neutral position in the pitch direction and yaw direction, wherein the pitch direction drive unit and yaw direction drive unit

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press the movable member toward the fixed member side by means of magnetic pressing forces caused by magnetic attractive action between the drive magnets and yokes, and wherein **the pitch directional position detecting unit and yaw directional position detecting unit have detecting magnets held by the movable member** and magnetic resistance effective elements which are disposed and fixed to said detecting magnets at predetermined intervals and detect changes in magnetic flux density due to movement of said detecting magnets, and magnetic fluxes with respect to the detecting magnets pass through the yokes of the movable member.

Claims 26 and 39 are substantially similar to Claim 13.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Wilson whose telephone number is (571) 272-7322. The examiner can normally be reached on 8:30am-5:00pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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